UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/224,376	12/31/1998	JOSEPH C. HARVELL	709000	3762

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CARR LAW FIRM, L.L.P.
670 FOUNDERS SQUARE
900 JACKSON STREET
DALLAS, TX   75202

EXAMINER
CHANG, JUNGWON

ART UNIT	PAPER NUMBER
2154	

DATE MAILED: 05/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 March 2003* .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *32-34 and 36-44* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *32-34 and 36-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .

4)☐ Interview Summary (PTO-413) Paper No(s). _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: .

DETAILED ACTION

1.   Claims 1-31 and 35 have been cancelled, and claims 43 and 44 are newly

added. Claims 32-34 and 36-44 are presented for examination.

2.   Claim 36 is objected to as being dependent upon a rejected base claim, but

would be allowable if rewritten in independent form including all of the limitations of the

base claim and any intervening claims.

3.   Claims 32-34 and 36-44 are rejected under 35 U.S.C. 112, second paragraph, as

being indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention.

      1.   The claim language in the following claims is not clearly understood:

          i.   as to claim 32, lines 2-3, it not clearly indicated the relationship

between a single selected computer and one or more computers (i.e., is

the single selected computer one of the one or more computers? and Is

the single computer selected from one or more computers?)

          ii.   as to claims 37, 43, 44, they have the same deficiency as claim 32

as set forth in the paragraph above.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 32, and 37-44 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Lim et al. (US 5,938,732), hereinafter referred to as Lim, further in view of Arendt

et al. (US 6,427,163 B1), hereinafter referred to as Arendt.

6.   As to claim 32, Lim discloses the invention substantially as claimed,

including the method for implementing a heartbeat protocol (col. 3, lines 30-37),

comprising: sending, to one or more selected server, heartbeat messages from a single

selected computer (i.e., group leader; col. 3, lines 38-47), indicating the availability of

computer resources on one or more computers (col. 3, lines 30-37; col. 8, lines 23-38;

col. 9, lines 34-44), such that the loss of a heartbeat from the single selected machine is

indicative that all computer resources are unavailable (i.e., failure detection; col. 4, lines

8-9; col. 6, lines 54-62; col. 8, lines 23-35; col. 12, lines 39-50), and the presence of a

heartbeat from the selected machine is indicative that all computer resources are

available (col. 5, lines 21-35 and 66-67; col. 6, lines 1-6); generating a message by the

single selected computer in accordance with the heartbeat protocol to indicate

availability status of the one or more computer resources (col. 3, lines 34-37; col. 5, line 66 – col. 6, line 6 and 15-26; col. 8, lines 23-38; col. 9, lines 34-44).

7.   Lim does not specifically disclose sending heartbeat messages directly to a server. However, Arendt discloses point-to-point communication used for sending heartbeat messages between nodes (col. 4, lines 38-41). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Arendt because Arendt's point-to-point communication (i.e., unicast) would allow the computer to transmit the heartbeat messages directly to other computer(s), thereby providing private communication.

8.   As to claim 37, Lim further discloses determining from the presence or absence of the heartbeat messages that all computer resources are available or unavailable (col. 3, lines 34-37; col. 5, line 66 – col. 6, line 6 and 15-26; col. 8, lines 23-38; col. 9, lines 34-44); and providing a response to a message query for the computer resources for which the heartbeat is absent that the computer resources are unavailable (i.e., failure detection; col. 4, lines 8-9; col. 6, lines 54-62; col. 8, lines 23-35; col. 12, lines 39-50).

9.   As to claims 38-40, Lim discloses providing additional information associated with the response to the message query concerning when the computer resources is expected to become available (col. 5, lines 61-65; col. 7, lines 55-58; col. 3, lines 44-

47).

10.   As to claim 41, Lim discloses the heartbeat is monitored by a primary master name server for a zone of a communications network comprising the computer resources (col. 3, lines 48-52 and 66-67 – col. 4, line 4; col. 6, lines 15-36).

11.   As to claim 42, Lim discloses the heartbeat is generated by at least one computer within a domain name zone (col. 7, lines 24-37; col. 6, lines 32-45).

12.   As to claim 43, Lim discloses the invention substantially as claimed in claim 32. In addition, Lim discloses transmitting the message to the one or more selected servers (col. 5, lines 25-35 and 66-67 – col. 6, line 6).

13.   As to claim 44, Lim discloses the invention substantially as claimed in claim 32. In addition, Lim discloses providing a response to a message query for the computer resources for which the heartbeat is absent that the computer resources are unavailable (col. 6, lines 54-58; col. 12, line 61 – col. 13, line 8).

14.   Claims 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lim et al. (US 5,938,732) and Arendt et al. (US 6,427,163 B1), as applied to claims 32, and 37-42 above, further in view of Olarig et al. (US 6,370,656 B1), hereinafter referre d to as Olarig.

15.   As to claims 33 and 34, Lim and Arendt do not specifically disclose requesting a

new heartbeat rate. However, Olarig discloses dynamically changing heartbeat rates

according to system demand (col. 3, lines 20 and 34-36; col. 4, lines 46-48; col. 6, line

59 – col. 7, line 5). It would have been obvious to one of ordinary skill in the art at the

time the invention was made to combine the teachings of Lim, Arendt, and Olarig

because Olarig's dynamically changing heartbeat rates would improve the integrity of

the system by allowing the system to monitor more frequently for detection of failure by

increasing heartbeat rate (i.e., decrease heartbeat interval).

Conclusion

16.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure:

Renesse et al., "A Gossip-Style Failure Detection Service", Chapman & Hall, pages 1-

16, 1996, Shin et al, "Reusable Middleware Service", College of Engineering University

of Michigan, pages 1-3 disclose heartbeat service, membership service and topology

management.

Jindal et al., patent 6,324,580 B1 disclose method and system for configuring a status

of servers and providing DNS services.

Peters et al., patent 6,415,373 B1, McIntyre et al., patent 6,381,218 B1 disclose network

controller system for using directed heartbeat packets.

17.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jungwon Chang whose telephone number is (703)305-

9669. The examiner can normally be reached on 8:30-6:00 (Monday-Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Meng-Ai An can be reached on (703)308-9052. The fax phone numbers for

the organization where this application or proceeding is assigned are (703)746-7239 for

regular communications and (703)746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is (703)305-

9669.

Jungwon Chang
May 16, 2003

MENG-AI T. AN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100